

Montana
Legislative Branch
Computer System
Planning Council
Legislative
branch computer
system plan

LEGISLATIVE BRANCH COMPUTER SYSTEM PLAN

October 1992

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A Report to the 53rd Legislature From the Legislative Branch Computer System Planning Council

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Legislative Branch Computer System Plan

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Introduction

I. Background

A. Requirements

A Legislative Branch computer system plan is required by Title 5, chapter 11, part 4, MCA. The Legislative Branch Computer System Planning Council (council) developed a plan in accordance with the requirements of that part.

In developing the plan, the council recognized that planning is an active process. Publilius Syrus said, "It is a bad plan that admits of no modification." (Maxim 469, Bartlett's Familiar Quotations, Copyright (C) 1937, 1948, 1955, 1965, 1968, 1980 by Little, Brown and Company (Inc.) All Rights Reserved) A computer system plan adopted in the last decade of the 20th century would indeed be a bad one if it didn't admit the need of modification nearly every day. The council thus recognized that the plan is more a process than a product. As such, the plan provides a process for continual evaluation, communication, and review rather than a blueprint for a specific configuration of hardware and software.

Evaluation of existing and potential applications is largely technical in nature. Recognizing this, the council relied to a great extent on a technical staff of the Legislative Branch agencies to review existing systems and recommend solutions to problems. The council reviewed and approved the recommendations of the technical planning group.

B. Review of computer system developments in the Legislative Branch

The Legislature and its agencies have relied to an ever greater extent

on computer applications over the past 2 decades. From 1970 to 1985, most applications were on the state mainframe computer. The Legislative Council, for example, used a proprietary program called Automated Legal Text Entry and Revision (ALTER) to manage code and bill text data. The advent of the personal computer rapidly transformed the scene. Stand alone dedicated word processors were barely introduced when they were replaced by personal computers with multiple capabilities. Soon, those personal computers were linked to one another in agency networks, and the potential for improvement exceeded the ability of the Legislative Branch to keep up.

Recognizing the need for planning, the Senate contracted with a private consultant during the 1987-88 interim to review the situation and recommend applications. Senate planning led to implementation of a network in the Senate for the 1989 session. The process was mirrored somewhat by the House, which implemented a limited system tied closely to the Legislative Council system. The growth of applications in the House and Senate led to recognition by legislators and staff alike that integration of the systems was important to the future operation of the Legislature and that central planning for the Legislative Branch was essential to achieving appropriate integration.

II. Existing Information System Review

Because recognition of the need for planning grew from the increased use of information systems throughout the Legislative Branch, some formal evaluation of all those systems was required. Review of existing systems was conducted by the technical staff serving the respective agencies. At varying levels of formality, the review included the following required evaluations:

- A. Catalog of existing information systems
- B. Information systems that are candidates for automation
- C. Information systems that are candidates for enhanced automation
- D. Existing automated systems that may be improved or integrated

This work clearly identified a predominant need to improve and further integrate office automation functions throughout the Legislative Branch.

Work required to catalog functions and services that would be improved through technology and the subsequent ranking of needs outside the immediate area of office automation essentially was eclipsed by the work required to complete the plan for managing office automation.

On this point, the council noted observations of Matthew Hogan, Director of the California Legislature's Assembly Office of Information Services. His observations appeared in the January/February 1989 issue of *Government Technology*:

Our product here at the legislature is a piece of paper called legislation. What goes into producing that product is analysis, which is in turn based on information. Making that analysis of higher quality, more timely, and delivered on the spot -- that's our competitive goal. It's a goal computer technology is helping us achieve.

While office automation planning became the immediate priority, the

council recognized that other uses of technology exist and will become more significant all the time. Hogan also stated in the same article:

Our new computing platform has empowered us to make great gains using what I would call "adjunct" tools -- software which automates common office functions. But I believe the future lies in not-yet-developed strategic software tools which specifically address the information needs of legislators. For instance, databases of demographic, economic and geographic information can help us improve the quality of legislative analysis.

The council believes that the planning process underway in Montana supports appropriate development of computing tools for the Legislative Branch now and in the future.

III. Compatibility With Executive Branch Standards and Goals

Participation by the Executive Branch at both the technical level and policy level of council activities assures constant communication on system compatibility. The council recognizes the need to assure compatibility as a legal requirement and to minimize purchase and support costs and to facilitate data transfer.

IV. Plan Summary

A. Recommended guidelines and standards

The plan for office automation includes recommended guidelines and standards for all aspects of the current system. The standards and guidelines are designed to ensure compatibility among the Legislative Branch agencies and to support a smooth transition to the future as

technology advances.

B. Unified budgeting

Support for unified network administration as recommended in the plan for office automation implies a centralized budget. The council adopted a proposal for centralized budgeting of network priorities. A spreadsheet in the FY 1994 and FY 1995 Central Network Budget Proposal chapter details the proposed budget. Following approval of the concept by the Legislature in 1991, the Legislative Council has included the proposal in its budget.

C. Conversion to Novell NetWare

When the Legislative Branch selected LAN Server as its standard for Network Operating Systems, this was one of two systems indentified as "state standards" in this area. Now that the state Network Operating Systems' standard has changed to Novell NetWare only, the council believes that the Legislative Branch should plot a course to move in the same direction. This plan includes a proposal for this conversion and the funding request to accomplish the conversion in FY 1994 and FY 1995.

D. Support for legislator-owned computers

Support for legislator-owned computers has been one of the most difficult issues to address over the years. The council anticipates growing difficulty in this area. Network administration is heavily dependent upon predictable behavior of attached components. Adding different brands of equipment with a variety of software and various release levels vastly complicates the problem and risks the integrity of the network. The council recommends against support of privately owned machines on the network.

E. Extension of system for legislator use

The council recognizes that integrating legislator use into the system will be a priority in the future. A great deal of planning will be required to define the appropriate hardware and software packages needed to provide a useful set of tools for legislators to use.

Recognizing this fact, the Legislature adopted HJR 23 in 1991, which directed a specific study of the question of legislator use of computers. The study document (Study on Use of Computers by Legislators) can be obtained from the Legislative Council. In short, while cost factors preclude recommending purchase of computers for all legislators to use in the near term, there is a great need to work toward making data services available to legislators.

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Legislative Branch Technological Achievements

Legislative Branch agencies have made several technological achievements in applying computer technology. Some of the major achievements are as follows:

- A. Agencies in the Legislative Branch have installed Local Area Networks (LANs), using state and Legislative Branch standards. These networks have been attached to the state data network and thus can communicate with each other and can communicate to the state mainframe. Several of the achievements listed below could not have been accomplished without these networks.
- B. A Bill Status/Bill Tracking system has been implemented and has been continually enhanced over the years. This system helps the House/Senate leadership and staff manage the flow of bills through the Legislature so that bill deadlines can be met. It also provides the public with a means of tracking legislative activities on legislation.
- C. The entire MCA camera-ready process is now done inhouse, using a PC-based system with laser printers. This has resulted in a significant savings in cost and no additional FTEs.
- D. Several improvements have been made to the bill drafting process by applying automation. The bill drafters now use a PC to draft a bill instead of writing it by hand. This has resulted in an increase in bill drafting staff productivity and has allowed data entry staff to work on other projects.
- E. A bill conflict check has been implemented. This automated process shows when two bill are amending the same section. A bill drafter then checks to ensure that the amendments do

not conflict.

- F. The full text of the MCA was placed on CD-ROM. This electronic storage version provides an alternative to publishing the MCA in hardbound version. Purchasers of the MCA CD-ROM can use parts of the MCA in briefs, memos, reports, etc., without having to rekey. In addition, it also provides a means of searching the MCA text for specific words or phrases.
- G. Several improvements have been made to the appropriation process. Better analysis of the appropriation process is being provided through use of the computer and its analysis tools, such as Lotus and R:BASE. Also, the time necessary to engross the general appropriations bill has been reduced from 3 to 4 days to 1 to 2 days.
- H. The cataloging system for the Council Library has been automated. This has improved the access to data in the Council Library.
- I. The process of preparing bill histories has been automated. Text for a bill history is produced from the Bill Status System instead of being keyed in by a clerical person. This has resulted in a reduction in the clerical staff needed to produce bill histories and has allowed clerical staff time to work on other projects.
- J. Preparation of the daily journal is now done on PCs at the rostrum. The old method required the rostrum journal staff to prepare the journal in written form for input by data entry staff. The new method has resulted in more timely preparation of the journal and a reduction in staff time needed to produce the journal.

K. Use of the analysis tools provided on the PC has resulted in an increased quality of the audits done by the Office of the Legislative Auditor.

L. Several improvements have been made to the amendments process. The amendments are now printed centrally at the amendments coordinators' offices. Special forms and the costs associated with printing them are no longer required. The general format of the amendment is maintained on the PC word processor. Amendments can be prepared by a bill drafter, reviewed by an editor, and sent to the amendments coordinators through the existing computer network. This has resulted in faster preparation of amendments and more accurate amendments.

Because all amendments must go through the amendments coordinators and because all amendments are stored on the computer, the amendments coordinators maintain databases of amendments. In the House, this database is used to display the text of amendments on the House display boards during second reading. The text of amendments is also used by the engrossing staff when engrossing some bills. It prevents having to rekey long amendments.

M. Significant enhancements have been made to the Legislative Budget System (LBS) used by staff during the budget analysis cycle. Enhancements include timesaving refinements made possible in part by the newer release of Lotus 1-2-3, version 2.3, and by improvements to system functions, including: default naming conventions; inflation factor default values; expanded choices for printing; balancing prompts; automatic funding options for expenditures; and optional linkage between operational expenditure data and personal services costs.

- N. Using the mainframe and the tools now available in Lotus 1-2-3, version 3.1 + , an expenditure profile system was developed that can provide both historical and current data at the first, second, or third level of expenditure and/or by accounting entity or fund.
- O. Using the advanced features available in Lotus 1-2-3, version 3.1 + , the revenue estimating system continues to be refined. The impact of a single factor changed by the Revenue Oversight Committee can be reflected throughout the revenue estimate with minimal analyst effort, allowing time for more focus on the analysis rather than on the procedural aspect.
- P. Branch staff, working at various agency sites, can attach to the Branch LAN via the state data network. This improves productivity by allowing the transfer of information easily without travel time to and from the office.
- Q. Several mainframe programs have been developed and enhanced which help evaluate the state agency financial information maintained on SBAS and PPP.
- R. Two EDP audit reports on agency use of information resources, as well as a statewide survey on information resources in state government, have been issued.
- S. Both the House and Senate vote systems have been upgraded to allow the software to run on a standard IBM compatible PC. This has made it easier for staff to support the system because the staff already has PC expertise. Since both vote system PCs are attached to the Legislative Branch Network, it

is easy to transfer the votes to the journal, which is also on a PC on the network. The Senate vote system also uses the network to print votes as they are taken on the network printer in the Senate main office.

Office Automation Issues and Needs

From a business and operational perspective, the Legislative Branch has traditionally functioned as a group of separate agencies: House of Representatives, Senate, Office of the Legislative Auditor, Office of the Legislative Fiscal Analyst, Environmental Quality Council, Consumer Counsel, and Legislative Council. The advent of enhanced office automation tools offers opportunities for increased cooperation and more effective service to the Legislature. To achieve the potential, however, a number of issues and needs must be addressed. The traditional separate agency approach must be surpassed.

- A. There are a variety of office automation tools available from several different vendors. Many of these tools can provide an adequate solution to office automation needs. If each agency implements the current most cost-effective solution, in a very short time, there will be many different solutions with no guarantee of compatibility or communication between agencies.
- B. The Legislative Branch already has a significant investment in office automation. Any branchwide office automation solution should minimize the impact on this investment.
- C. The office automation tools selected must provide adequate confidentiality of data stored on the computer.
- D. The office automation tools selected must provide enough flexibility to allow each agency to meet its individual data processing needs.
- E. The office automation tools selected must be able to be supported by as small a staff as possible. This is critical from

a cost-effectiveness standpoint and also in light of the current recruitment and retention problems with data processing professionals.

- F. The office automation tools selected must conform to statewide hardware and/or software standards. Without conformity, there is no guarantee of support or training from the Department of Administration, and there is no guarantee that telecommunication between the Legislative Branch and other branches of state government will work effectively. The council is required to coordinate Legislative Branch standards with Executive Branch standards to the extent possible under 5-11-403(2)(c), MCA.

- G. The temporary nature of the House and Senate staff (they are here for approximately 6 months every 2 years, and several new staff members are hired each session) causes some unique problems regarding support of office automation.
 - 1. House and Senate staff members are hired within 2 to 4 weeks before session starts and, therefore, have a very short time to learn the office automation tools provided.

 - 2. It is difficult to find qualified staff in all skill ranges to work on a temporary basis. It is nearly impossible to hire qualified technical staff on a temporary basis because of the shortage in the data processing professional area. Hiring outside consultants is a solution but has the following disadvantages:
 - (a) per unit of service cost is higher;

(b) consultant has to learn legislative process at Legislature's expense;

(c) there is loss of continuity from session to session.

3. There tends to be a lack of continuity from one House/Senate legislative staff to another. Because the controlling party in each house and the leadership positions can change following an election, new staff are usually hired for each session. This causes problems for the support staff to configure the office automation system to the specifications of the new staff.

Office Automation Guidelines

The agencies in the Legislative Branch must conform to the following guidelines:

- I. Implement an integrated Local Area Network that conforms to statewide standards and that has one Network Operating System. (Implementation will require a phased-in approach for those agencies not currently using the standard selected. This allows time for those agencies to plan and budget for the change as it is cost-effective to do so.)

Advantages

- Requires smaller number of support staff.
- Provides easier communication between agencies.
 - . The backbone network provides access to other agencies and to the mainframe.
- Provides several levels of file security.
 - . The security on the file server can be set up to allow only certain users access to certain subdirectories.
 - . When a file is stored on the hard disk of the workstation, no other workstation or file server on the network can access that hard disk. Also, if the workstation has a key lock or keyboard password, then no one can access files on that hard disk without having the key or knowing the password.
 - . Most application programs (for example, WordPerfect and Lotus) allow the user to place a password on the document when it is stored. No one is allowed access to that document without knowing the password.
- Provides flexibility.
 - . Each workstation can be configured to users' needs.
 - . Additional workstations can be added as Legislative Branch needs grow.

- Provides logical network configuration independent of physical network.
- Provides a single-system image to the user that eases support requirements and that makes it easier for Legislative Branch employees to work at any station.
- Provides least impact on direction legislative agencies have already taken.
- Provides cost-effective method of sharing specialized and/or high-cost resources, such as laser printers, tape backup units, and uninterruptible power supplies.

Disadvantages

- The Network Operating System selected may not meet all of the needs of each individual agency.
- Requires that more security features be put on the system. From a cost standpoint, this is a disadvantage because the added security features are more costly to implement. However, from a security standpoint, this may be an advantage because it forces the implementation of security when it is needed.
- Requires more planning to implement at the branch level than at the agency level. This disadvantage, once again, may be an advantage from the branch standpoint as the fruits of the added planning are reaped.

Cost/Benefit Analysis

Five legislative agencies have one brand of networking software and one agency has another. There will be conversion costs involved in converting to one brand of networking software. The conversion costs relate to purchasing the new software and possibly more memory for the file servers. In addition, there will be significant personnel time involved in implementing the new networking software.

Also, the state has adopted Novell NetWare as the standard. By following this

standard, the Legislative Branch can rely on the Department of Administration for training, backup support, and technical advice.

The alternative to an integrated approach is to allow each agency to go its own way. With this approach, there may be duplication of effort in implementation, maintenance, and support areas. Also, communication with other legislative agencies and other state government agencies would be more technically difficult and thus more costly.

Although there are some short-term conversion costs, the long-term savings in duplication of effort and ease of communication far out weigh them.

II. Centralize the file server management and support role. File servers will be budgeted for, purchased, and maintained by a central staff.

Advantages

- Allows for more efficient staffing. This is a highly technical area that requires qualified technical staff. With a shortage of qualified technical people, a central operation would be the best approach.
- Works best for House and Senate because they would have trouble finding adequate technical staff. Also works best for EQC because of its small staff.
- Fits best into the Legislative Council role because the Council is the only agency with a full-time data processing support staff.
- Provides a preapproved, "inplace" solution for the House and Senate, regardless of the controlling party.
- Eliminates compatibility problems because software maintained on the Legislative Branch file servers would be maintained at the same release levels.
- Prevents future incompatibility problems, such as all agencies not maintaining current release levels. Each agency would not have to justify its budget to the Legislature, with some getting approval and some not.

- Maximizes benefits of the technical support role defined in 5-11-404, MCA.

Disadvantages

- Some mechanism would have to be put in place to set priorities for deciding how the central budget for file servers would be spent to meet the needs of all agencies.
- Some mechanism would have to be put in place to set priorities for the central file server support staff. There would be times when demands on the staff would be higher than could be provided for.
- Agencies would lose some control over their network.

Cost/Benefit Analysis

There should not be any increased cost with this approach unless an increased level of service was requested. In the long term (assuming the office automation area will continue to grow), the cost to the Legislature in this area should be less than individual agency management because of the elimination of duplication of effort among agencies and because of more efficient use of staff across agencies.

III. Use a central support staff to support office automation.

- Same arguments as for centralized file server management.

IV. Within state guidelines, select similar major software packages for the workstation. ("Major software packages" means software that all or a majority of the legislative agencies would use, such as WordPerfect. This does not preclude an agency from purchasing or developing a software package that meets a unique need. However, that agency will check with the other agencies to determine if they have the same need and if that need can be met with the same software package. Note Appendix B - Process for Recommendation of Hardware and Software Standards.)

Advantages

- Similar software is easier to support (problem solving and training).
- Smaller number of support staff required.
- Allows easier communication at application level (i.e., workstations using WordPerfect can readily pull in a document created by other workstations using WordPerfect).
- Conforms to the standardization requirement of 5-11-403(1)(d), MCA.
- Allows for cross-use of staff.

Disadvantages

- The unique needs of each agency may not always be met by the major software package selected.

Cost/Benefit Analysis

In the word processing, spreadsheet, and database area, the Legislature is fairly close to having similar packages. All of the legislative agencies except one use WordPerfect as their word processing package. All of the legislative agencies use Lotus as their spreadsheet package. All of the legislative agencies except one use R:BASE as their database package.

The conversion costs to a different software package involve:

- A. the purchase price of the software;
- B. any additional hardware needed to run the new software;
- C. any personnel time needed to implement the new software;
- D. any conversion cost involved in converting the existing data to the new file format for the new software;
- E. in the case of database packages, any cost involved in rewriting the programs to run under the new database software; and
- F. any costs associated with training users how to use the new software.

When agencies work as closely as some of the legislative agencies do, the benefits of having similar software packages are significant. Similar packages allow for easy communication of data across agency boundaries without any conversion process. It also allows for more efficient use of support staff because support staff does not have to learn and support several varieties of each software package.

- V. Within state guidelines, select a minimum hardware configuration for workstations and use this for purchase of all new workstations. The minimum hardware configuration should anticipate a 5-year life cycle before the software begins to bypass the capabilities of the hardware. (Note Appendix B - Process for Recommendation of Hardware and Software Standards.)

Advantages

- Ease of support.
- Ease of user movement among agencies.
- Meets standardization requirements of 5-11-403, MCA.

Cost/Benefit Analysis

There may be some additional costs incurred by an agency because the minimum configuration selected is more than is required for its particular need at that time. However, these costs should be outweighed by not having to replace the workstation in a shorter time as opposed to a 5-year timeframe.

- VI. All major upgrades or major changes in the office automation area will be approved by the council. This maintains management control at the Agency Director level.

Advantages

- This assures that the individual agencies will comply with Legislative Branch standards.

- The resulting upgrades and changes would be the best solution possible because the approval procedure could draw on the expertise and experience of all the Legislative Branch agencies. The Legislature could be assured that upgrades and changes being implemented are well justified.
- Potential impacts on users can be minimized with advanced planning and notice required by a more formal approval procedure.

Disadvantages

- There could be a delay in the implementation of upgrades and changes because of the time required to get approval for them.

Cost/Benefit Analysis

There is no short-term cost increase. However, there should be a long-term savings because of standardization.

VII. Legislative agencies will jointly prepare and present their budget requests for office automation to the Legislature.

Advantages

- Helps ensure that all agencies follow the same automation plan.
- The Legislature could see that the agencies follow a consolidated approach.
- The Legislature would only have to consider the request once instead of having to consider it separately with each agency's budget request.

Disadvantages

- If the request is turned down, then no agency would have the budget to continue with automation. Under separate requests, some agency requests may be accepted and others denied.

Cost/Benefit Analysis

There should be no short-term cost increase with this approach when compared to each agency submitting related costs in individual agency budgets. However, there should be a long-term cost-effectiveness because of the consolidated planning process that takes place.

Current Office Automation Plan

The following plan describes each agency's role in participating in the combined network for the Legislative Branch. (The Consumer Counsel does not have a network and does not have plans for one in the near future. It is not affected by parts of this plan.) This plan covers FY 1993, FY 1994, and FY 1995. It reflects the achievement of working jointly since 1989.

- A. For the 1993 session, the House, Senate, Legislative Council, EQC, and LFA will continue to use IBM OS/2 LAN Server as their Network Operating System. OLA will remain on Novell NetWare. The council adopted a proposal for conversion of the Legislative Branch to Novell NetWare (see Appendix A). If the prototype is successful and funding is available, all Legislative Branch agencies will convert to Novell NetWare during FY 1994 and FY 1995.

- B. The House, Senate, Legislative Council, EQC, OLA, and LFA will continue to move toward central management of the Legislative Branch network. Budgeting, purchasing, and Network Administrator technical support are already highly centralized. The Central Network budget request for FY 1994 and FY 1995 now includes almost all network-related costs for each of the above agencies. This includes not only file server costs but also workstation costs.

- C. Support for the office automation environment in the Legislative Branch will be provided as follows:

Definition of Support Roles.

- . Network Technical Support. This involves implementing and maintaining the file servers and the

logical network. These duties are assigned to the Network Manager and Network Administrator.

User Support. This involves training and problem resolution for the users of the system. For example, user support involves helping a user with application software, such as WordPerfect or Lotus.

Application Programming Support. This involves designing, programming, and implementing a system specific to an agency or software application.

Distribution of Support Roles.

With the move to centralized management of the Legislative Branch network, a Network Administrator FTE was approved in the FY 1992-93 Central Network budget. This position was filled and is located in the Legislative Council. This position, along with the Network Manager position in the Legislative Council, will provide the network technical support function (as described above) for the Legislative Branch.

The Legislative Council currently provides network technical support for all agencies using OS/2 LAN Server. OLA is currently providing network technical support for its NetWare LAN. After successful completion of the conversion to Novell NetWare by the Legislative Branch, the Legislative Council will provide network technical support for all Legislative Branch agencies.

The Legislative Council will provide user support and application programming support for the House, Senate, Legislative Council, and EQC. LFA and OLA will each provide

its own user and application support.

- D. The buying philosophy for workstations is to purchase a workstation that will have a life span of 5 years. This implies that a relatively high powered workstation will be required to make the capacity of the workstation last the entire life cycle. The software industry continues to add new features to its products that require more workstation resources. At about 5 years, a PC is starting to become technically obsolete. Because of wear and tear, it is also more prone to mechanical failure. Therefore, maintenance prices usually begin to rise.
- E. The following software packages have been adopted as standards for the Legislative Branch. All legislative agencies will be required to follow these standards for new purchases or to convert to them when it is most cost-effective. These standards will be periodically reviewed and updated as needs change and as the state and computer industry standards change.

<u>Application</u>	<u>Software Standard</u>
Word processing	WordPerfect
Spreadsheet	Lotus 1-2-3
Database	R:BASE or dBase, depending on the application requirements
Desk top publishing	Ventura Publisher
Graphics	Harvard Graphics
Operating system	DOS and OS/2 (continue to evaluate Windows to see if it will meet the Legislative Branch needs)
3270 Emulation	Attachmate EXTRA!

E-Mail	ZIP!Mail
Modem hardware	Hayes compatible
Dialup software	Remote 2/Crosstalk
Mainframe/PC link	Panlink

All legislative agencies will try to maintain the same release level of each software standard.

FY 1994 and FY 1995

Central Network Budget Proposal

I. Background on Office Automation Budget Issues

There are ongoing expenses that are necessary to maintain an adequate office automation environment. Some of the main issues associated with these ongoing expenses are as follows:

- A. The Legislative Branch has established a 5-year life span for PCs. In the planning, purchasing, and budgeting process, the Legislative Branch will replace PCs and PC equipment after 5 years of use.

With a 5-year life cycle, 20% of the PCs in the Legislative Branch will need replacement each year.

- B. The Legislative Branch has established a replacement cycle of 4 years for network file servers. Due to the increased usage and thus wear and tear on file server, it has a shorter life cycle than does the PC used as a workstation. The budget request reflects this replacement cycle.

- C. The Legislative Branch has established a replacement cycle of 4 years for printers. Printers are largely mechanical devices and thus are subject to breakdown after long usage. They also become obsolete technically after about 4 years. The budget request also reflects this replacement cycle.

- D. Software also has a life cycle. However, usually it is shorter than the hardware life cycle, and full replacement is not always necessary. As the software vendors make

improvements to their software, to remain competitive and to fix bugs, they offer these improvements as upgrades. The cost to upgrade to the new software varies but is typically less than the original purchase price. Most software vendors do not require that you upgrade immediately. However, over time (usually from 1 to 3 years), they will drop support for the older releases of their software. This requires that an upgrade be made in order to maintain adequate support from the vendor.

Also, it is easier to exchange documents with another state agency if both agencies are on the same release of the software. In some cases, state standards require certain releases. For example, a specific release of Lotus 1-2-3 is required for the Budget Development System.

- E. The current predominant operating system used on the PC is DOS. This operating system has been around since 1981 when the PC was first introduced. DOS does not take full advantage of the newer computer chip technology. There are other operating system software packages available that take advantage of the newer chip technology. Two of the predominant packages are OS/2 and Windows. These packages require a PC with more advanced technology to operate effectively (preferably an 80386 PC (or 80386SX) with 4MB of memory or more). Some of the PCs in the Legislative Branch already have this capacity, but a majority do not. As the replacement cycle, as described above, continues to take place, a larger percentage of the PCs in the Legislative Branch will have this capacity.

To move the Legislative Branch entirely to the new operating systems (OS) would be costly from both a hardware and software standpoint. However, a certain number of PCs

should be brought up under the new OS to gain more familiarity with it and to have enough knowledge to plan for the conversion to it. LFA is budgeted to convert all of the PCs in its agency to the new OS. OLA and the Legislative Council are budgeted to have only limited users and technical staff on the new OS.

- F. There seems to be an ever-increasing demand for technical, user, and application support for the network. In FY 1992, one FTE was added to the Legislative Council for network technical support of the Legislative Branch LAN. Since then, more workstations and functionality have been added to the network. Requests for support in all areas continue to be more than existing staff can provide. There is a constant backlog of projects and demand for new services.

However, because of the anticipation of further budget reductions, there is no additional request for FTEs in this area. Legislative agencies plan to prioritize projects and otherwise live within their means.

II. Central Network Budget Issues

In order to maintain an adequate and functional computer network in the Legislative Branch, the following budget issues and budget proposal are presented.

The dollar amounts in this budget proposal are for maintaining the office automation environment and do not reflect budget requests associated with data processing projects (particularly mainframe-related projects) specific to an individual agency.

Items in the Central Network budget request are divided into the following major categories:

- A. Hardware/Software Training. To maintain the Legislative Branch network, technical training on the file server hardware and software is necessary. The current LAN administrators have IBM OS/2 LAN Server training. With the conversion of the Legislative Branch to Novell NetWare, training for NetWare is necessary.
- B. Hardware Maintenance. This includes consideration of an equipment replacement plan for Legislative Branch computers, printers, and peripherals. Each agency has assorted equipment that should be replaced as it becomes obsolete or breaks down. The budget proposal follows the life cycle guidelines proposed in this plan. Hardware maintenance for existing equipment is contained in individual agency budgets.
- C. Software Maintenance. The Legislative Branch will periodically upgrade its software from existing versions to new releases. As new versions are released by the software vendors, the Legislative Branch will consider the need to purchase the upgrade and implement the change branchwide. The budget proposal includes one upgrade for all major software packages used on the network. This includes both the file server and workstations software.
- D. New Hardware and Software. Hardware and software to implement and maintain the branchwide network are included here. This includes workstations, file servers, workstation software, E-Mail, etc., necessary to maintain Legislative Branch network services. The portable pool is also part of this item. Portables from the pool are used at committee

meetings, at home, or on trips. The pool is available to all legislative agencies on an equal basis.

Today, many of the staff have and use a workstation at their desk. Therefore, only a minimal new equipment request is included. However, this request does include moving a small number of the Legislative Branch PCs to the new OS (OS/2 or Windows). It should also be noted that the Department of Administration has agreed to pay the software costs for conversion of the Legislative Branch to Novell NetWare; therefore, this cost is not in the budget request.

- E. Network Service Charges. The Department of Administration, Information Services Division, charges each agency to connect a workstation to the network. The Central Network budget includes network connect charges for the file servers and the portable pool. Network connect charges for agency workstations are the responsibility of each individual agency.

- F. Supplies. Backup tapes, tape drive cleaners, and other supplies to maintain the Legislative Branch file servers.

III. Central Network Budget Proposal

The following spreadsheet illustrates the Central Network Budget Proposal for FY 1994-95:

ITEM	UNIT COST		COUNCIL		LFA		AUDITOR		EOC		SENATE		HOUSE		BRANCHWIDE NET		ALL AGENCY		
	QTY	TOTAL	QTY	TOTAL	QTY	TOTAL	QTY	TOTAL	QTY	TOTAL	QTY	TOTAL	QTY	TOTAL	QTY	TOTAL	QTY	TOTAL	
-Training																			
Novell Network CNE training 2.5 people	\$4,000	1.5	\$6,000	0.5	\$2,000	0.5	\$2,000	0.5	\$2,000	0.5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,000	
-Hardware Maintenance																			
File Server Maintenance	\$2,845	3	\$7,935	1.5	\$3,968	1.5	\$3,968	1.5	\$3,968	1.5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,870	
Net. Admin. Workstation Maint.	\$2,000	2	\$4,000	1	\$2,000	1	\$2,000	1	\$2,000	1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,000	
Portable Maintenance	\$638	\$0	\$0	\$0	\$0	\$0	\$3,190	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,190	
Records Management Tape Storage	\$660	1	\$660	1	\$660	1	\$660	1	\$660	1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,980	
Equipment Replacement																			
File Server Replacement	\$20,000	0	\$0	1	\$20,000	0	\$0	0	\$0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,000	
Workstation Replacement	\$4,000	22.8	\$91,200	6	\$24,000	20.8	\$83,200	2.4	\$9,600	0.4	\$1,600	10	\$40,000	\$0	\$0	\$0	\$0	\$249,600	
Printer Server Replacement	\$4,000	1.8	\$8,400	1.8	\$6,400	0	\$0	0.4	\$1,600	0	\$0	1.8	\$8,400	\$0	\$0	\$0	\$0	\$20,800	
Printer Replacement	\$3,500	3.63	\$12,705	1.32	\$4,620	3.98	\$13,860	0.68	\$2,310	1.88	\$6,930	3.3	\$11,550	\$0	\$0	\$0	\$0	\$51,975	
File Server UPS Replacement	\$1,000	1.8	\$1,800	0.4	\$400	0.4	\$400	0.4	\$400	0.4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,400	
Misc Hardware replacement (Surge protectors, etc)	\$2,000	2	\$4,000	2	\$4,000	1	\$2,000	2	\$4,000	0.5	\$1,000	1	\$2,000	0	\$0	\$0	\$0	\$17,000	
-Software Maintenance																			
File Server Upgrade	\$5,000	1	\$5,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,000	
Misc File Server Software	\$2,500	3	\$7,500	1.5	\$3,750	1.5	\$3,750	1.5	\$3,750	1.5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,000	
Workstations																			
DOS	\$85	57	\$4,845	20	\$1,700	57	\$4,845	7	\$595	1	\$85	24	\$2,040	\$0	\$0	\$0	\$0	\$14,110	
WP	\$85	50	\$4,250	18	\$1,480	41	\$3,465	6	\$510	1	\$85	20	\$1,700	\$0	\$0	\$0	\$0	\$11,390	
LOTUS	\$100	9	\$900	14	\$1,400	36	\$3,600	1	\$100	1	\$100	1	\$100	\$0	\$0	\$0	\$0	\$8,200	
Rbase (Server Version)	\$1,500	\$0	\$0	\$0	\$1,500	1	\$1,500	0	\$0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,000	
dBase	\$1,500	1	\$1,500	2	\$3,000	2	\$3,000	2	\$3,000	2	\$3,000	2	\$3,000	\$0	\$0	\$0	\$0	\$15,000	
Harvard	\$125	3	\$375	2	\$250	2	\$250	2	\$250	2	\$250	2	\$250	\$0	\$0	\$0	\$0	\$1,500	
Misc. (Norton, etc)	\$750	2	\$1,500	2	\$1,500	2	\$1,500	1	\$750	1	\$750	1	\$750	0	\$0	\$0	\$0	\$975	
-New Hardware and software																			
File Servers																			
Backup File Server	\$20,000	0	\$0	0.5	\$10,000	0.5	\$10,000	0.5	\$10,000	0.5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,000	
Additional Server Disk Space	\$3,400	2	\$6,800	1	\$3,400	1	\$3,400	1	\$3,400	1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$13,600	
Upgrade Tape backup units	\$5,000	1	\$5,000	1	\$5,000	1	\$5,000	1	\$5,000	1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,000	
Fault Tolerance	\$5,000	2	\$10,000	1	\$5,000	1	\$5,000	1	\$5,000	1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,000	
Workstations																			
Additional Workstations (plus software)	\$4,800	\$0	\$0	0	\$0	0	\$0	0	\$0	12	\$57,600	\$0	\$0	\$0	\$0	\$0	\$0	\$57,600	
Additional Software	\$5,800	\$0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,800	
SQL Database Software	\$1,000	1	\$1,000	1	\$1,000	1	\$1,000	1	\$1,000	1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,000	
New OS	\$99	12	\$1,188	18	\$1,584	5	\$495	1	\$99	4	\$396	4	\$396	\$0	\$0	\$0	\$0	\$4,158	
Windows or OS/2	\$1,500	12	\$18,000	18	\$27,000	5	\$7,500	1	\$1,500	4	\$6,000	4	\$6,000	\$0	\$0	\$0	\$0	\$46,200	
Windows or OS/2 version of WP, Lotus, etc	\$362	12	\$4,344	18	\$6,516	5	\$1,810	1	\$362	4	\$1,448	4	\$1,448	\$0	\$0	\$0	\$0	\$15,204	
4MB Memory	\$75	4	\$300	2	\$150	2	\$150	1	\$75	10	\$750	10	\$750	\$0	\$0	\$0	\$0	\$2,175	
Misc.	\$15,200	1	\$15,200	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	\$0	\$0	\$0	\$0	\$15,200	
Additional E-Mail Users	\$2,000	1	\$2,000	1	\$2,000	1	\$2,000	1	\$2,000	1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,000	
Color Printer, etc																			
Remote Access to Network/Modem server																			
-Network Connect Charges																			
File servers	\$480	6	\$2,880	2	\$960	2	\$960	2	\$960	2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,800	
Portable Pool	\$480	0	\$0	0	\$0	10	\$4,800	10	\$4,800	10	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,800	
-Supplies																			
Backup tapes	\$24	20	\$480	10	\$240	10	\$240	0	\$0	0	\$0	0	\$0	\$0	\$0	\$0	\$0	\$960	
Tape Drive Cleaners	\$109	8	\$872	4	\$436	4	\$436	0	\$0	0	\$0	0	\$0	\$0	\$0	\$0	\$0	\$1,744	
UPS Batteries	\$1,000	2	\$2,000	0	\$0	1	\$1,000	0	\$0	0	\$0	0	\$0	\$0	\$0	\$0	\$0	\$3,000	
hcl plambal (2.wk1)	\$225,634		\$225,634		\$132,670		\$132,670		\$171,999		\$21,101		\$21,101		\$71,534		\$71,534	\$898,081	

ITEM	COMMENT
-Training Novell Netware CNE training 2.5 people	Certified Network Engineer training for the Network Administrator and 5 CNE training for other staff
-Hardware Maintenance File Server Maintenance Net. Admin. Workstation Maint. Portable Maintenance Records Management Tape Storage Equipment Replacement File Server Replacement Workstation Replacement Printer Replacement Printer Replacement File Server UPS Replacement Misc. Hardware Replacement (Surge protectors, etc)	The unit cost reflects both FY 94 & 95 costs. The count includes backup file servers The unit cost reflects both FY 94 & 95 costs. The count includes Network Admin workstations in Council, LFA and Auditors. The unit cost reflects both FY 94 & 95 costs. Store backup tapes of file servers off site. This amount is for FY 94 & 95 Only LFA file server will be 4 years old or older Replace 20% of the workstations in each agency each FY. Replace 20% of the Print Servers in each agency each FY. Some print servers may be replaced with Novell/Tokenring cards in the HP printer. Replace 50% of the Printers in each agency for each FY, i.e. 6 year replacement cycle. Replace 20% of the file server UPS's each FY. The amount covers the whole biennium.
-Software Maintenance File Servers Novell Upgrade Misc. File Server Software Workstations DOS WP LOTUS Rbase (Server Version) dBase Harvard Misc. (Rioton, etc)	Upgrade to Novell Netware 4.0 or next release in FY 95. Cost is approx 20% of purchase price. This amount should cover entire branch costs. Tape Backup software, etc. One upgrade per workstation per biennium. One upgrade per workstation per biennium. One upgrade per existing copy of LOTUS per biennium. One upgrade per existing copy of Rbase per biennium. One upgrade per existing copy of dBase per biennium. One upgrade per existing copy of Harvard per biennium.
-New Hardware and software File Server Backup File Server Additional Server Disk Space Upgrade Tape backup units Fault Tolerance Workstations Additional Workstations (plus software) Additional Portables/Notebooks (plus software) Additional Software SQL Database Software New OS Windows or OS/2 Windows or OS/2 version of WP, Lotus, etc 4MB Memory Misc. Additional E-Mail Users Color Printer, etc Remote Access to Network/Modem server	One backup server to accommodate uptime requirements for both LFA and Auditors This is to upgrade or replace file server tape backup units This expenditure is for building more fault tolerance, either through hardware or software, into the file servers to provide better uptime. Additional Workstations (plus software) Additional Portables/Notebooks (plus software) Additional Software SQL Database Software New OS Windows or OS/2 Windows or OS/2 version of WP, Lotus, etc 4MB Memory Misc. Additional E-Mail Users Color Printer, etc Remote Access to Network/Modem server
-Network, Connect Charges File Server Portable Pool Supplies Backup tapes Tape Drive Cleaners UPS Batteries	ISD Network Communication: Connect charges 40/mo. per connection. Auditors manage the 5 portables in the pool. Unit cost is for one year, quantity is for 2 years. For backup tape drives on file servers For backup tape drives on file servers Replace batteries in UPS when they go bad.

IV. Agency Issues

The following describes specific agency budget issues that are not part of the office automation environment. These budget items are in the individual agency budgets.

A. Legislative Council

1. TextDBMS. The Legislative Council still maintains this mainframe package but continues to move functions provided by it to the PC platform.
2. Geographic Information System (GIS). The Legislative Council has a GIS consisting of a SUN UNIX workstation with ARC/INFO software and a pen plotter. The system is being used in the reapportionment process. Support for the reapportionment process should end in February 1993. The Council plans to maintain the system for FY 1994 and FY 1995 to determine: (1) if GIS can be used in the Legislature; and (2) if the GIS function can be maintained within the current level of support staff. If these conditions cannot be met, the GIS hardware and software will be turned over to the Natural Resource Information System (NRIS). NRIS provides GIS support for all of state government and has similar equipment to that described above.
3. Hardware/Software. Some additional hardware that is specific to the Legislative Council includes a new laser printer for MCA camera-ready production and CD-ROM manufacturing equipment for the MCA.

B. Legislative Auditor

1. SBAS Transaction Analysis. The Legislative Auditor plans to investigate implementation of a system for transaction analysis using the microcomputer environment to increase efficiency and effectiveness of the audits. This may require additional software.
2. PPP Conversion. This would allow expansion of the office's capabilities on the state mainframe and its use of the PPP files for financial analysis in the agency audits.

C. Legislative Fiscal Analyst

1. Legislative Requests. The Office of the Legislative Fiscal Analyst receives numerous requests from legislators for information that require mainframe tax simulations or pay plan computations. During the 1993 biennium, the Legislature provided an \$18,700 biennial appropriation to fund the data processing costs associated with these requests. The Legislative Finance Committee adopted rules concerning use of and allocation of these funds. The 1995 biennium budget request includes \$18,700 for this purpose.

APPENDIX A

Proposal for Conversion by the Legislative Branch to Novell NetWare

The long-term commitment of the Legislative Branch should be to move to the state standard. Being on the state standard will provide for a better interface with other state agencies and will provide technical support from ISD as well as other state agencies.

When the Legislative Branch selected LAN Server as its standard for Network Operating Systems, this was one of two systems identified as "state standards" in this area. Now that the state Network Operating Systems' standard has changed to Novell NetWare only, the council believes that the Legislative Branch should plot a course to move in the same direction.

A well-planned and tested approach to this conversion will minimize risks when encountering pitfalls inherent in conversions. The following conditions should be met before the Legislative Branch converts to Novell NetWare:

1. ISD has successfully converted its operation from LAN Server to Novell NetWare and has achieved a stable environment.
2. A prototype network has been installed and tested successfully within the Legislative Branch. No unresolved technical problems have been encountered by ISD or by the prototype that would cause a significant impact on our users.
3. The support issue is resolved by ISD. For example, we can contact someone at ISD who has a direct link to Novell, or we can successfully train a Certified NetWare Engineer who can contact

Novell's technical people.

4. There is no significant trend in the industry or within state government that indicates that Novell NetWare will be replaced by a new version of Novell NetWare or a version of Novell NetWare that runs under OS/2 or some other newer technology. If such a trend is apparent, the Legislative Branch may want to stop the conversion to the current version of Novell NetWare, with the intent that a conversion would be made to the newer technology.
5. Appropriate technical staffing and funding are available to complete the conversion. ISD has agreed to pay for some of the cost. Any additional funding will have to be obtained from the 1993 Legislature. Managers must agree that staff priorities will have to be adjusted to allow sufficient time for this project. Special sessions would impact a conversion schedule.

The following plan is proposed for conversion to Novell NetWare:

1. The Legislative Branch technical staff will participate in the planning process for ISD's conversion to Novell NetWare in order to learn more about the process and to provide answers to the questions put forth above.
2. After the 1993 Regular Legislative Session, bring up a prototype of the latest ISD-supported Novell NetWare. Complete the prototype and provide a report to the Legislative Branch Computer System Planning Council by October 31, 1993.
3. The council and the Technical Planning Group will evaluate the status of the five conditions stipulated above. The council will decide whether to go ahead with the conversion to Novell NetWare by December 31, 1993.

4. If the decision is to go ahead with the conversion, LFA, EQC, and Legislative Council will convert to Novell NetWare by April 30, 1994. The House and Senate will convert to Novell NetWare by July 31, 1994. If the decision is made to not proceed, a statement as to the reason(s) why will be formulated and an alternative course defined to continue to work toward the state standard.

APPENDIX B

Process for Recommendation of Hardware and Software Standards

The following criteria will be used by the Technical Planning Group of the Legislative Branch Computer System Planning Council in making recommendations for hardware and software standards for the Legislative Branch and in making decisions as to whether to convert to a new release of a software package or in implementing a new hardware technology.

1. Does the hardware or software meet the agency and branch needs?
2. Is there other hardware or software that meets current standards and that can also meet the agency or branch needs?
3. Does the hardware or software follow the current Legislative Branch standards or the direction that the Legislative Branch is taking?
4. Does the hardware or software follow current state standards or the direction that the Department of Administration is taking?
5. Is the hardware or software an industry standard?
6. Are a majority of the legislative agencies already using the hardware or software; i.e., is it a de facto standard already?
7. Would selecting this software standard cause a majority of the agencies to purchase new hardware to support the standard? If so, are the new features of the software worth the cost to convert the Legislative Branch?

8. Would selecting this hardware standard cause a majority of the agencies to purchase new software to support the standard? If so, are the new features of the hardware worth the cost to convert the Legislative Branch?
9. Does the purchase of this hardware or software fit into the budget based on other foreseeable budget priorities?
10. Is adequate support (documentation, training, and maintenance) available (through the Legislative Branch, the Department of Administration, or the vendor) for the hardware and software?

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